Abstract

Charles Univerzity in Prague

Faculty of Pharmacy in Hradec Králové

Study program: Pharmacy

Author: Tereza Petlánová

Supervisor: Mgr. Klára Konečná, Ph.D.

Title of diploma thesis: Evaluation of activity of potentional antibiotic substances through the use of microdilution broth method III

Background: The aim of this thesis was to test antibiotic substances produced by the Department of Pharmaceutical Chemistry and Drug control Faculty of Pharmacy of Charles University in Hradec Králové.

Methods: Substances were tested by using microdilution broth method on eight strains of bacteria: *Staphylococcus aureus*, *Staphylococcus aureus* methicilin resistant, *Staphylococcus epidermidis*, *Enterococcus* sp., *Escherichia coli*, *Klebsiella pneumoniae*, *Klebsiella pneumoniae* ESBL positive and *Pseudomonas aeruginosa*.

Results: Substances were divided into five groups according to common structural features. The most effective was group of aliphatic derivates of pyrazine-2,3-dicarbonitrile. A groups of cyclic derivates of pyrazine-2,3-dicarbonitrole and cyclic derivates of pyrazine-2-carboxamide were almost ineffective.

Conclusion: Of the total of 34 tested compounds was observed antibacterial effect in 13 of them. The most susceptible strains were *Enterococcus* sp., *Straphylococcus aureus* and *Staphylococcus epidermidis*. On the contrary, the test substance showed no efficacy for all tested G^- bacteria (*Escherichia coli*, *Klebsiella pneumoniae*, *Klebsiella pneumoniae* ESBL positive and *Pseudomonas aeruginosa*).

Key words: Minimal inhibitory concentration, antibiotics, biofilm, resistance.